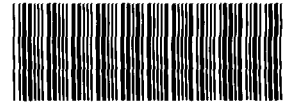


4D106



000056972



**Rocky Mountain  
Remediation Services, L.L.C.**  
*protecting the environment*

Rocky Flats Environmental Technology Site  
P O Box 464  
Golden Colorado 80402 0464  
Phone (303) 966-2677  
Fax (303) 966-6244

July 26, 1995

95-RM-ER-00012-KH

Robert G Card  
V P , ER/WM and Integration  
Kaiser-Hill Company  
P O Box 464, Bldg 111  
Golden, Colorado 80402-0464

TRANSMITTAL OF PROPOSED ACTION MEMORANDUM (PAM) FOR THE HOT SPOT REMOVAL ACTION AT THE B-1 DAM,  
AGENCY REVIEW DRAFT, JULY 1995 - JLM-00018-95

Action Delivery of PAM to the Colorado Department of Public Health and Environment, and the Environmental Protection  
Agency for review and comment

Rocky Mountain Remediation Services is pleased to deliver six (6) copies of the Proposed Action Memorandum for the B-1  
Dam Hot Spot Removal Action, Agency Review Draft, July 1995 Please deliver five (5) copies to the Department of Energy,  
Rocky Flats Field Office (DOE, RFFO), for distribution to the Environmental Protection Agency and the Colorado Department  
of Public Health and Environment The additional copy is included for Kaiser-Hill records

The PAM is expected to be implemented in early fiscal year 1996 Agency comments on the PAM must be received by August  
7, 1995 in order to maintain the present schedule The Agency Review Draft has incorporated comments previously received  
from DOE, RFFO

If there are any questions regarding the preparation of this document, please contact Mark Burmeister at extension 5891

*James L. McAnally*

James L McAnally  
President, RMRS, L L C

MCB alc

Attachment  
As stated

cc  
M C Broussard - RMRS - w/attach - 080  
M C Burmeister - RMRS - w/attach - T891B  
A L Casillas - RMRS - w/attach - T891E  
L Guinn - K-H - w/attach - T130F  
S L Myrick - RMRS - w/attach - 080  
S M Paris - RMRS - w/attach - 080  
A M Parker - RMRS - w/attach - 080  
M J Peters - K-H - w/attach - T130D  
A Sieben - K-H - w/attach - T130D  
N B Sandlin - K-H - w/attach - T130D  
A M Tyson - RMRS - w/attach - 080  
RMRS Records  
ER Records (2)



**ADMIN RECCRD**

A-0006-000556

Y 17

11 070 F

# **Proposed Action Memorandum**

---

**Hot Spot Removal at the B-1 Dam Area  
Operable Unit 6**

**Draft**

**July 1995**

**Rocky Flats Environmental Technology Site  
Arvada, Colorado**

## TABLE OF CONTENTS

TITLE PAGE	1
TABLE OF CONTENTS	2
1 0 PURPOSE	3
2 0 BACKGROUND AND DESCRIPTION	5
2 1 B-1 Dam Hot Spot History	5
2 2 Contamination at the B-1 Dam Area	5
3 0 REMOVAL ACTION	6
3 1 Proposed Action	6
3 2 Waste Management Considerations	9
4 0 APPLICABLE RELEVANT AND APPROPRIATE REQUIREMENTS	10
5 0 CONSISTENCY WITH LONG TERM OBJECTIVES	14
6 0 ENVIRONMENTAL CONSIDERATIONS	14
7 0 PROPOSED PROJECT SCHEDULE	15

## LIST OF TABLES

TABLE 4-1	ACTION SPECIFIC ARARS	11
-----------	-----------------------	----

## LIST OF FIGURES

FIGURE 1-1	B-1 DAM HOT SPOT	4
FIGURE 3-1	B-1 DAM HOT SPOT CLEANUP AND WASTE DISPOSITION STRATEGY	8

## 1 0 PURPOSE

The purpose of this Proposed Action Memorandum (PAM) is to present the Department of Energy/Rocky Flats Field Office's (DOE/RFFO) plan for the removal of radionuclide contaminated soils near the B-1 dam in Operable Unit (OU) 6 at the Rocky Flats Environmental Technology Site (SITE). The SITE is located in Jefferson County, Colorado.

The purpose of removing the hot spot at the B-1 dam is to reduce the risk of potential radiological contaminant migration from the source area into the ponds. Additionally, information gathered during this project will provide data for the OU-6 Remedial Investigation report and eventual closure/further remediation (if required) of the OU. The hot spot removal is an accelerated remedial action as defined in the amendment to the current Interagency Agreement (IAG) regarding Accelerated Response Actions, i.e., a remedial response action that all parties (DOE, Environmental Protection Agency [EPA], and Colorado Department of Public Health and Environment [CDPHE]) agree is necessary and appropriate to mitigate a threat or potential threat to public health or the environment and can be implemented within 6 months. The PAM is the primary decision document used by DOE and the regulatory agencies to agree upon the proposed action and therefore substantiates the need for the action and the selected cleanup method.

# B-1 Dam Hot Spot

- ☐ Operable Unit 6
- ☒ Radiological Controlled Area
- Standard Map Features**
- ☒ Buildings or other structures
- ☒ Lakes and ponds
- ☒ Streams, ditches or other drainage features
- ☒ Fences
- ☒ Contours (20 Intervals)
- ☒ Rocky Flats boundary
- ☒ Paved roads
- ☒ Dirt roads

DATA SOURCE:  
Topographic maps and features provided by  
USGS, Rocky Flats, Inc. 1981  
Hydrology (same unit)



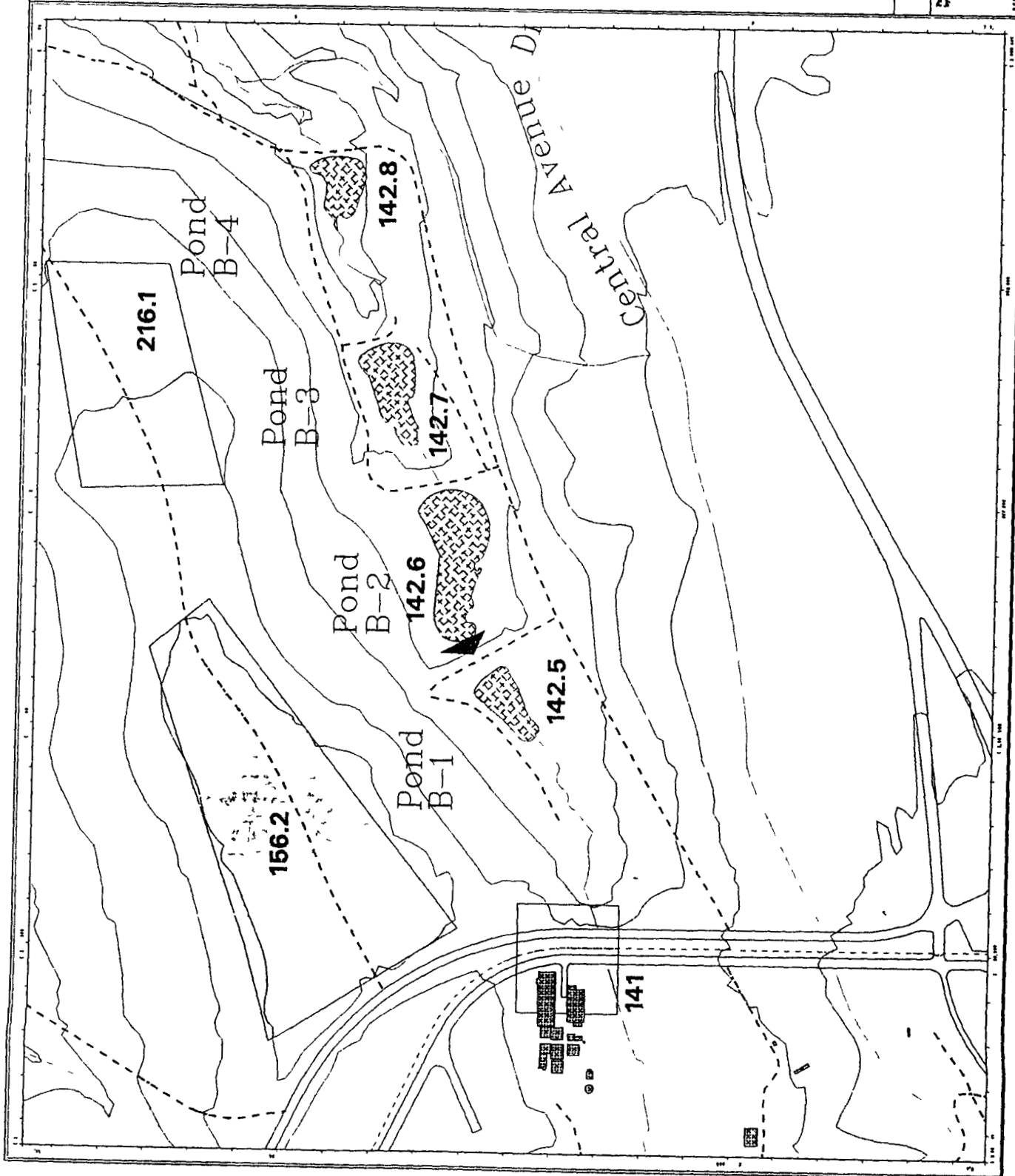
U.S. Department of Energy  
Rocky Flats Environmental Technology Site



Rocky Flats  
Environmental Technology Site  
1000 West 10th Avenue  
Boulder, Colorado 80502

MAP ID: B-14125-0001

July 20, 1995



5

## **2 0 BACKGROUND AND DESCRIPTION**

### **2 1 B-1 Dam Hot Spot History**

A hot spot in the B-1 dam area was discovered during a rehabilitation program for the Retention Ponds in the spring of 1993. The rehabilitation program included the removal of a sediment collection system, the removal of 90 feet of 6" pipe, possibly an abandoned laundry drain pipe, and the regrading of the dams and the dam road surfaces near the retention ponds. During the excavation, a small area of soil contamination near the uncovered sediment collection system was identified by a Radiological Control Technician (RCT) as reading 16,000 counts per minute on a Field Instrument for the Detection of Low Energy Radiation (FIDLER). During removal of the abandoned drain line, a deteriorating 6" pipe broke at several points. The break points were smeared and registered counts on field instrumentation that were above background. Historical information pertaining to the laundry water discharge reveals that laundry water contained traces of plutonium and uranium. There is no history of laundry water containing hazardous waste.

RCTs surveyed the surrounding area and no other contamination was found. The contaminated soil is believed to be at a depth of 2 to 4 feet beneath the surface. After RCTs monitored the surrounding area, the contaminated area was staked, roped, and posted as a Radiologically Controlled Area (RCA).

### **2 2 Contamination at the B-1 Dam Area**

Upon discovery of the hot spot, renovation work was stopped, and a soil sample was taken from the RCA on May 21, 1993. The soil sample was analyzed for metals and radionuclides. The radiological data indicated elevated levels of AM-241 and Pu-239/240, however the data was rejected by an independent data validator due to several laboratory errors in the analysis process. Field measurements by the Radiological Engineering Department verified the

6

radionuclides present in the area using gamma spectroscopy to be Pu-239 and Am-241. The radionuclide levels were determined to exceed the levels as described in DOE Order 5400.5, Radiation Protection of the Public and Environment, for a hot spot.

Copper was the only metal that exceeded the background Upper 99/99 Tolerance Limit (UTL 99/99) for surficial soils as a result of the total metals analysis. When compared to pond sediment background levels, no metals exceeded the UTL 99/99 threshold.

Upon completion of dam renovation work, the radiologically contaminated area was covered with a High Density Polyethylene (HDPE) liner and backfilled with soil and rip rap.

### **3.0 REMOVAL ACTION**

#### **3.1 Proposed Action**

The proposed removal action strategy is outlined in Figure 3-1. Prior to the initiation of removal actions, an approximation of the local background level of radioactivity will be established by taking ten (10) measurements with a FIDLER in the surrounding area and calculating the mean of those measurements. This will designate a local background level for radioactivity and will be used as a target level for removal of contaminated soils. The ten measurement locations will be chosen at random in or near the RCA, by an RCT.

After the local background level of radioactivity has been established, the rip rap overlying the HDPE liner will be cleared with a backhoe for excavation. The removal of the contaminated soils will include the use of a backhoe, with each scrape excavating approximately 6 inches of soil. After each scrape of the excavation, the soils in the excavation will be surveyed with a FIDLER and compared to the established local background level. Removal will continue until the soil approaches the local background level using the FIDLER. At this time, an additional 6" scrape will be taken, and the excavation will be surveyed with the FIDLER again. If FIDLER measurements of the soil approach the local background level, excavation will stop; if not, excavation will continue as described above. Confirmation samples of the excavation will then

be taken, according to the SAP. A standard simple random approach will be used for determining the locations for confirmation sample collection. This approach will be implemented by laying out a grid over the excavation and collecting samples from specified random coordinates within the excavation.

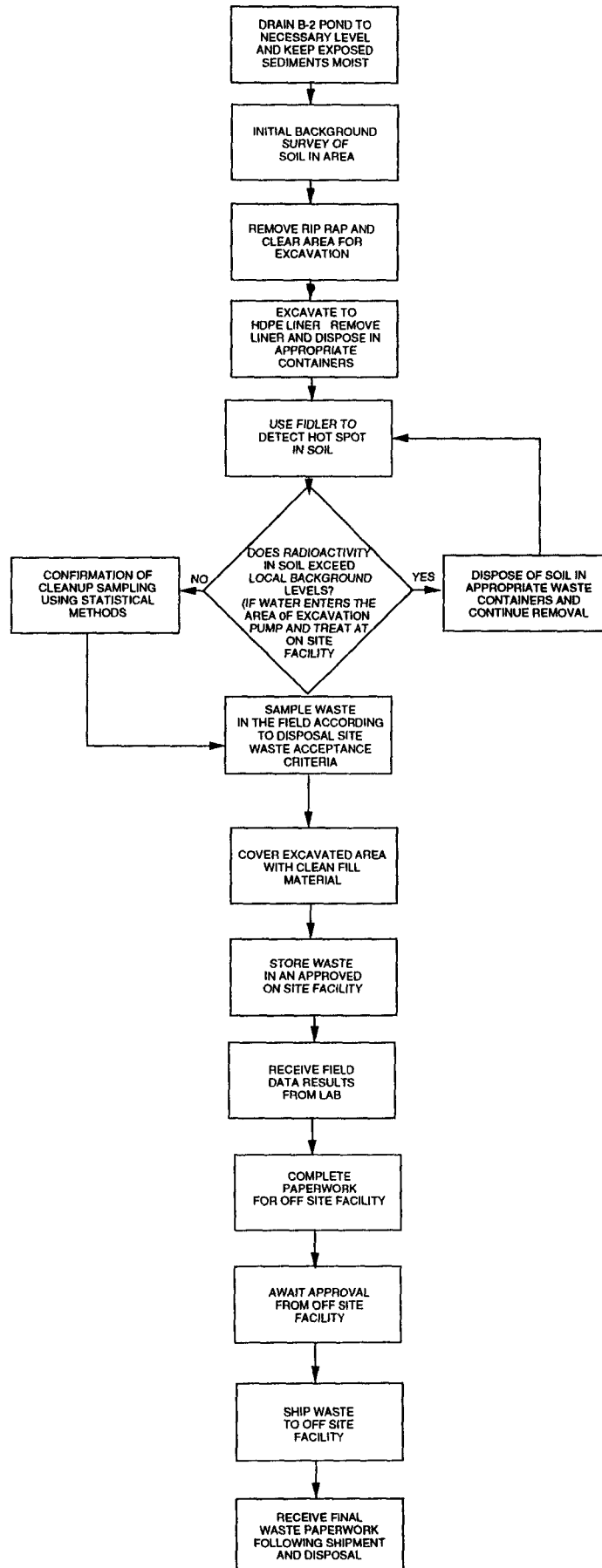
The excavated soil will be placed in approved waste containers, sampled per the Sampling and Analysis Plan (SAP) for waste characterization purposes, and stored in an approved on-site temporary storage facility until shipment to an approved offsite disposal facility. Because of the HDPE liner, elevated levels of phthalates may exist. The phthalates, if present, will be assumed to be interference from the plastic, and nothing more. Soils and rip rap above the liner, determined to be at or near the local background level for radioactivity, will be utilized as backfill material. This determination will be made based upon evaluation of real-time FIDLER measurements. The HDPE liner will be decontaminated and disposed of properly.

Because the hot spot is located at the toe of the B-1 dam, and contamination may reach 2 to 4 feet beneath the surface, there is a possibility that groundwater will seep into the contaminated area during excavation. If the hot spot becomes saturated, a small pump will be used to drain the pit, minimizing the risk of radioactive contamination migrating into the B-2 pond. The water will be containerized, transported and treated at Building 374, Building 891, or the OU-2 Field Treatability Unit.

In order to be protective of human health and the environment, preventative measures (i.e., soil misting, air monitoring, etc.) will be taken to reduce the likelihood of contamination migrating from the hot spot during removal activities.



**FIGURE 3-1  
B-1 DAM HOT SPOT CLEANUP  
AND WASTE DISPOSITION STRATEGY**



### **3 2 Waste Management Considerations**

After removal of the contaminated soil from the B-1 area, the waste will be placed into approved waste containers and managed in accordance with the applicable requirements. Waste containers will be placed into storage on the day of generation in accordance with DOE Order 5820 2A and other applicable requirements. The maximum volume of contaminated soil that is expected to be generated is approximately 4 cubic yards. The estimate for the amount of waste soil that will be generated will be revised based on field surveying results.

The contaminated soil that is removed will be stored at SITE in RCRA Unit 18 03 while awaiting disposal. Although not part of this action, it is expected that the waste generated will be shipped to Envirocare in Utah (if the waste is determined to be a RCRA mixed waste) or to the Nevada Test Site (if the waste is strictly low level waste). The offsite disposal determination will be made based on analytical results from the waste characterization.

In the event the excavation becomes saturated with water, the water will be removed with a small pump, containerized, transported and treated at the appropriate on-site water treatment facility. The general project/waste disposition strategy is described in Figure 3-1.

During the excavation, samples will be collected for waste characterization. The sampling and analytical methods will be in accordance with the waste acceptance criteria (WAC) for the anticipated disposal facility.

The removal of the contaminated soil is a reliable and long-term operation and follow-up maintenance will not be required. Removal of the contaminated soil can also be implemented easily and readily. Special permits will not be required, and mixed/low level waste storage capacity is available at SITE for the removed waste prior to offsite disposal.

#### 4 0 APPLICABLE RELEVANT AND APPROPRIATE REQUIREMENTS

In accordance with the IAG, as amended, an objective of accelerated actions at SITE is the identification and achievement, if practicable, of Federal and State Applicable or Relevant and Appropriate Requirements (ARARs) and other To-Be-Considered criteria that are associated with the proposed action. There are three types of ARARs: (1) chemical-specific, (2) location-specific, and (3) action-specific ARARs. Chemical-specific ARARs are those that set health-based or risk-based concentration limits for soil, groundwater or surface water for specific pollutants. There are no chemical-specific ARARs for the chemical (if detected) and radionuclide contaminants in soils. However, there are TBC's for residual soil standards for radionuclides (DOE Order 5400.5, Chapter IV). Location-specific ARARs are regulations that set restrictions on activities or contaminant levels based on unique characteristics of the site. There also are no promulgated Federal or State location-specific ARARs for the removal action. Action-specific ARARs set controls or restrictions on particular kinds of activities related to management of hazardous substances or pollutants. The appropriate action-specific ARARs are listed specifically in Table 4-1.

**TABLE 4-1 ACTION SPECIFIC ARARS**

Action	Requirement	Citation	ARAR/ TBC	Prerequisite
Container Storage (Onsite)	If wastes are stored beyond 90 days in storage units generator must comply with storage requirements in Subpart 265 (detailed below)	6 CCR 1007.3 40 CFR 262.34(b)(1)	R&A	Storage of hazardous waste beyond 90 days for large quantity generators (If RCRA waste is present)
	Containers of hazardous waste must be <ul style="list-style-type: none"> <li>• Maintained in good condition</li> <li>• Compatible with hazardous waste to be stored and</li> <li>• Closed during storage (except to add or remove waste)</li> </ul>	6 CCR 1007.3 and 40 CFR 265.171a 6 CCR 1007.3 and 40 CFR 265.172 6 CCR 1007.3 and 40 CFR 265.173	R&A	RCRA hazardous waste (listed or characteristic) held for a temporary period before treatment disposal or storage elsewhere in a container (i.e. any portable device in which a material is stored transported disposed of or handled) (6 CCR 1007-3 and 40 CFR 260.10) (If RCRA waste is present)
	• Inspect container storage areas weekly for deterioration	6 CCR 1007.3 40 CFR 265.174		
	• Keep incompatible materials separate. Separate incompatible materials stored near each other by a dike or other barrier	6 CCR 1007-3 and 40 CFR 265.177		
	• RCRA hazardous waste generators must put the date storage begins and the words "Hazardous Waste" on the containers	6 CCR 1007.3 and 40 CFR 262.34(a)	R&A	
Treatment/ Disposal	• Prohibition of specific wastes from land disposal	40 CFR 268 Subpart C 6 CCR 1007-3	R&A	Disposal of waste must meet 40 CFR 268 (Land Disposal Restrictions) (If RCRA waste is present)
	• Waste must meet treatment standards before disposal	40 CFR 268 Subpart D 6 CCR 1007-3	R&A	

12

**TABLE 4-1 ACTION SPECIFIC ARARS**

Action	Requirement	Citation	ARAR/ TBC	Prerequisite
Storage	<ul style="list-style-type: none"> <li>• Ensure protection of public health and safety</li> <li>• External exposure to waste and concerns of radioactive material which may be released into surface water groundwater soil plants and animals can only result in an effective dose equivalent not exceeding 25 mrem/yr to any member of the public</li> <li>• Ensure that committed effective dose equivalents received by individuals who inadvertently intrude into facility after 100 years will not exceed 100 mrem/yr for continuous exposure or 500 mrem for a single acute exposure</li> <li>• Protect groundwater resources</li> <li>• Storage facility must be monitored for migration of radionuclides Monitor surface soil and air</li> <li>• Maintain records for all low-level waste that enters and leaves the storage facility</li> <li>• Purpose of storage may be to allow nuclides to decay or to store wastes until disposal method becomes available</li> </ul>	DOE Order 5820 2A Chapter III	TBC	DOE facilities must comply with DOE Orders pertaining to health and safety and protection of workers from radiation
Removal and Storage	<ul style="list-style-type: none"> <li>• Comply with all applicable environmental protection safety and health standards</li> </ul>	DOE Order 5480 4		DOE facilities must comply with DOE Orders and promulgated DOE regulations in 10 CFR concerning environmental health and safety
	<ul style="list-style-type: none"> <li>• Comply with dose limits for protection of public and limits for residual radioactive material in the environment</li> </ul>	DOE Order 5400 5		

**TABLE 4-1 ACTION SPECIFIC ARARS**

Action	Requirement	Citation	ARAR/ TBC	Prerequisite
	<ul style="list-style-type: none"> <li>• Comply with dose limits for protection of public and limits for residual radioactive material in environment</li> </ul>	DOE Order 5400.5		
	<ul style="list-style-type: none"> <li>• Comply with generally applicable nuclear safety standards in this rule</li> <li>• Develop and implement quality assurance program</li> <li>• Occupational exposure to workers must be within acceptable limits and as far below the limits as is reasonably achievable. Comply with "Limiting Values" for radiation exposure</li> </ul>			
Removal	<ul style="list-style-type: none"> <li>• Personnel conducting storage and handling operations from which fugitive particulate emissions will be emitted must use all available practical methods to minimize the emissions. Personnel may use enclosures cover compacting watering limitation of fines and other methods</li> <li>• There may be no off property emissions</li> </ul>	Regulation 1 CO Air Quality Control Commission	A	
	Air Contaminant Emissions Notices	Regulation 3 CO Air Quality Control Commission	A	

NOTE DOE Order 5400.3 Hazardous Waste and Radioactive Mixed Waste Program" was canceled as of August 1994  
 a Colorado regulations pursuant to the Colorado Hazardous Waste Act for hazardous waste generators and container storage are similar to but more stringent than federal RCRA standards  
 A = Applicable R&A = Relevant and Appropriate TBC = To Be Considered

## 5 0 CONSISTENCY WITH LONG TERM OBJECTIVES

The alternatives being evaluated for Operable Unit 6 include removal and disposal of the contaminated media in the B-1 dam area. The removal action is therefore consistent with the proposed Operable Unit 6 final remedial action.

## 6 0 ENVIRONMENTAL CONSIDERATIONS

The National Environmental Policy Act (NEPA) requires that actions at SITE be evaluated for potential impacts to the environment. Impacts to the natural environment resulting from this action will be minimal and are not expected to result in any adverse impacts to wetlands, floodplains, threatened or endangered species or their habitats, and historic or cultural resources. A site walk through has been performed at the B-1 dam which investigated the area as a potential Preble's Meadow Jumping Mouse (PMJM) habitat. However, the site was not considered a suitable habitat for the PMJM and approval was granted by the SITE Ecology group to proceed with the effort. In addition, a Threatened and Endangered survey will be conducted prior to the start of removal activities. The route selected for the backhoe, and drum movement will minimize impacts to vegetation and will primarily occur on the barren slope of the dam. The activity will also be coordinated with the State Engineers office to ensure dam stability.

There will be minor releases of air pollutants from heavy equipment during excavation, and a very minor increase in particulates (dust) associated with the operation of loading and unloading, and transferring containers. The potential exists for chemical and radionuclide exposure to the workers and the environment during excavation, sampling, transportation, and decontamination activities, however, worker exposure will be mitigated with the use of appropriate protective equipment and relevant procedures.

Alternatives evaluated include completing the actions as outlined or taking no action.

Through implementation of this PAM, some minor environmental impacts are expected. These

include impacts resulting from transportation and movement of equipment, decontamination activities, and potential exposure to the worker and the environment

When considering the alternative of no further action, there is potentially greater occupational exposure due to the migration and spread of hazardous materials. Radiological contaminant migration from the source area into the ponds is a potential threat to public health and the environment.

## **7.0 PROPOSED PROJECT SCHEDULE**

The schedule listed below is a proposed schedule and the dates are subject to change due to regulatory and public concerns, budgetary constraints, weather delays, etc.

- August 24, 1995 Draft Proposed Action Memorandum(PAM) to EPA, Colorado Department for Public Health and Environment (CDPHE) and Public for 30 day review
- September 23, 1995 End Public Comment Period
- October 13, 1995 Revised Final PAM submitted to EPA and CDPHE for final approval

The PAM should be approved by EPA and CDPHE shortly after the submittal of the revised Final PAM. This time period usually takes less than two weeks if the revisions to the PAM are suitable and there are no other outstanding issues.

Once the Final PAM is approved, the following tasks should be completed sequentially:

- Two weeks after PAM is approved, documentation will be completed
- Two weeks after documentation is completed, the removal activities will begin

Additionally, the following dates are proposed and are also subject to change:



- November 30, 1995 Removal Activity Complete
- May 17, 1996 Waste Acceptance Criteria Met
- June 4, 1996 Ship Waste for Disposal

The removal of the contaminated soils as described in this PAM is scheduled to commence in the first fiscal quarter of 1996. These are projected dates, any delays, scope or budget changes may affect the schedule.